

Preface	p. xiii
Applications of Nuclear Physics	
Applications of AMS [¹⁴ C] on Climate and Archeology	p. 3
Global Security, Medical Isotopes, and Nuclear Science	p. 9
Accelerator-based Boron Neutron Capture Therapy and the Development of a Dedicated Tandem-Electrostatic-Quadrupole	p. 17
Heavy Ion Reaction Modeling for Hadrontherapy Applications	p. 25
X-ray Spectroscopy for Quality Control of Chemotherapy Drugs	p. 31
A Proton Recoil Telescope Detector for Neutron Spectroscopy	p. 35
Error Assessment of Homogenized Cross Sections Generation for Whole Core Neutronic Calculation	p. 39
Measurement of the Neutron Induced Fission Cross Section on Transuranic (TRU) Elements at the n_TOF Facility at CERN	p. 43
On-going Nuclear Physics and Technology Research Programmes in Europe	p. 49
Scanning Cargo Containers with Tagged Neutrons	p. 57
Sensitivity Upgrades to the Idaho Accelerator Center Neutron Time of Flight Spectrometer	p. 63
Five Years of Cyclotron Radioisotope Production Experiences at the First PET-CT in Venezuela	p. 67
Simulation of Neutron Backscattering Applied to Organic Material Detection	p. 71
QCD in Nuclear Physics	
Hadronic Resonances from Lattice QCD	p. 77
Chiral Restoration in the Nuclear Medium	p. 85
The CLAS Excited Baryon Program at JLab	p. 93
Nuclear Photoproduction of Pseudoscalar Mesons at Forward Angles up to 6.0 GeV	p. 101
The Quest for Spinning Glue in High-energy Polarized Proton-Proton Collisions at RHIC	p. 109
The Physics of the CMS Experiment	p. 115
The Need for Polarization for Extracting Baryon Resonances and the NSTAR Program at CLAS	p. 123
Search for Gluonic Excitations	p. 131
Results and Frontiers in Lattice Baryon Spectroscopy	p. 137
[ϕ]-Meson Photoproduction with Linearly Polarized Photons at Threshold Energies	p. 141
The g13 Experiment at Jefferson Lab: Strangeness Production on the Neutron in the Deuteron with Polarized Photons: [χ] [η] [\rightarrow] KY	p. 146
Measurement of [π^+] [π^-] Photoproduction in Double Polarization Experiments Using the CLAS Spectrometer	p. 150
Exotic Mesons at JLab before 2013? The Search for New Forms of Matter at CLAS	p. 154
Search for the [θ^+] Pentaquark in the Reaction [γ]d [\rightarrow] pK ⁰ K ⁻ (p) with CLAS	p. 158
Studying the Nucleon Structure with Spin	p. 162
An Unquenched Quark Model of Baryons	p. 168
Inclusive Inelastic Electron Scattering from Nuclei	p. 174

Measurements of the Helium Form Factors at JLab	p. 178
Polarization Transfer in [⁴ He(χ not reproducible),e(χ not reproducible)] ³ H	p. 182
Fundamental Symmetries and Neutrinos	
Parity Violation in Electron Scattering	p. 189
It's Only a Matter of Time (Reversal): A New Search for the Electric Dipole Moment of the Neutron	p. 196
Measuring Neutrino Oscillations with Nuclear Reactors	p. 204
Large Searching for Higher Dimensional Gravity with Neutron Experiments	p. 212
Radiative Decay of the Free Neutron	p. 221
Analyzing Atmospheric Neutrino Oscillations	p. 227
MINERvA, a Neutrino-Nucleus Interaction Experiment	p. 239
The MuCap Experiment: A Measurement of the Muon Capture Rate in Hydrogen Gas	p. 245
Precision Solar Neutrino Measurements with the Sudbury Neutrino Observatory	p. 249
Comparison of Muon Capture in Light and in Heavy Nuclei	p. 253
Nuclear Structure and Nuclear Reactions	
Structural Evolution in Atomic Nuclei: Residual Interactions, Quantum Phase Transitions and the Emergence of Collectivity	p. 261
Synthesis, Decay Properties, and Identification of Superheavy Nuclei Produced in [⁴⁸ Ca-induced Reactions	p. 269
Disentanglement of Nuclear Medium Effects in the Optical Model Potential	p. 277
Pseudo-Symmetry and Majorana Operators in pf-Shell	p. 283
Complete Fusion and Break-up Fusion Reactions in Light Ion Reactions at Low Energies	p. 287
Shell Model Description of Odd-Odd Co and Cu Nuclei	p. 291
A Microscopic Quantal Model for Nuclear Collective Rotation	p. 295
Symmetry Energy as a Function of Density and Mass	p. 301
Bimodality-A 'Smoking Gun' Signal for a First Order Phase Transition?	p. 307
In-Beam Gamma-Ray Spectroscopy in the spdf [³⁷ Ar Nucleus	p. 315
Investigating the Nuclear Equation of State through N/Z Equilibration	p. 321
Effects of Neutron Emission on Fragment Mass and Kinetic Energy Distribution from Thermal Neutron Induced Fission of [²³⁵ U	p. 326
Nuclear and Particle Astrophysics	
Nuclear Reactions and Stellar Evolution: Unified Dynamics	p. 333
A Unified Equation for the Reaction Rate in Dense Matter Stars	p. 341
Calculation of Nuclear Masses Using Image Reconstruction Techniques	p. 348
The Many Faces-and Phases-of Neutron Stars	p. 356
Origin of Stellar Abundances in the Early Galaxy	p. 364
Bulk Properties of Nuclear Matter from Excitations of Nuclei	p. 371
Early Black Hole Signals at the LHC	p. 376
TOF-B[ρ] Mass Measurement of Neutron Rich Nuclei at the NSCL	p. 383
Effects of Ion Correlations in Supernovae and Neutron Star Crusts	p. 387
Neutron Skin Thickness and Neutron Star Equations of State: A Strong Relationship	p. 391

Magnetic Phases in Dense Quark Matter	p. 395
Gluon Vortices and Induced Magnetic Field in Compact Stars	p. 401
Search for Hadronic Axions Emitted from the Sun	p. 407
Facilities and Instrumentation	
The Sao Paulo Microtron: Equipment and Planned Experiments	p. 413
The SPES Direct Target Project at the Laboratori Nazionali di Legnaro	p. 422
The SiC Direct Target Prototype for SPES	p. 428
Study of the Fluorescence Detector Upgrade of the Auger Observatory of Cosmic Rays	p. 432
Dilepton Production in Ion-Ion Collisions Studied Using HADES	p. 436
The Time of Flight Upgrade for CLAS at 12 GeV	p. 441
Determination of Thermal Neutron Capture Cross-Sections at Budapest PGAA Facility	p. 445
Position-Sensitive Nuclear Spectroscopy with Pixel Detectors	p. 449
The Silicon Pixel Detector for ALICE Experiment	p. 453
In Honor of Professor Ettore Gadioli	
A Few Reminiscences of My Fifty Years in Physics	p. 459
Poster Presentations	
k0-INAA of Archaeological and Industrial Venezuelan Samples	p. 467
Radon Concentration in the Cataniapo-Autana River Basin, Amazonas State, Venezuela	p. 469
Infrared Spectroscopy Study of Irradiated PVDF	p. 471
Analysis of 33 MeV Nitrogen Irradiated UHMWPE	p. 473
Radioisotope Concentration in Lake Sediments of Maracaibo, Venezuela	p. 475
LabView Based Nuclear Physics Laboratory Experiments as a Remote Teaching and Training Tool for Latin American Educational Centers	p. 477
In vivo Prompt Gamma Neutron Activation Analysis Facility for Total Body Nitrogen and Cd	p. 479
Wood-Polymer Composites Obtained by Gamma Irradiation	p. 481
Measurement of Ratio $R = \frac{BR(D^0 \rightarrow K^0 \pi^+ \pi^-)}{BR(D^0 \rightarrow K^0 \pi^+ \pi^0)}$ in $\pi^+ p$ - Nucleus Interactions at 500 GeV/c	p. 483
Software Environment for the Implementation of Tomographic Reconstruction Algorithms Applied to Cases of Few Projections	p. 485
On the Ability of Order Statistics to Distinguish Different Models for Continuum Gamma Decay	p. 487
Geant4 Simulation of Continuum Gamma Spectroscopy with Gammasphere and the Spinspectrometer	p. 489
Radiographic Technique for Densitometric Studies Using Heavy Ion Microbeams	p. 491
Soil Analysis Using the Semi-parametric NAA Technique	p. 493
Dose Calculation Evolution for Internal Organ Irradiation in Humans	p. 495
Physical Scalar Mass Particles in the 331 Model	p. 497
A Student Project to Use Geant4 Simulations for a TMS - PET Combination	p. 499
Editors' Note	p. 501
Committees	p. 503

List of Participants	p. 505
Author Index	p. 509
Table of Contents provided by Blackwell's Book Services and R.R. Bowker. Used with permission.	